TEST REPORT

Report No.:	BCTC2411812631E
Applicant:	M2AiM Services LLC
Product Name:	GPS collar for Hunting Dogs
Test Model:	DOGZE 4G
Tested Date:	2024-11-04 to 2024-12-09
Issued Date:	2024-12-09

Shenzhen BCTC Testing Co., Ltd.

FCC ID: 2BMTM-DOGZE4G

Product Name:	GPS collar for Hunting Dogs
Trademark:	DOGZE, HUNTPOWER
Model/Type Ref.:	DOGZE 4G
Applicant:	M2AiM Services LLC
Address:	10409 Pacific Palisades Ave.Las Vegas, Nevada 89144-1221, United States
Manufacturer:	M2AiM Services LLC
Address:	10409 Pacific Palisades Ave.Las Vegas, Nevada 89144-1221, United States
Prepared By:	Shenzhen BCTC Testing Co., Ltd.
Address:	1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China
Sample Received Date:	2024-11-04
Sample tested Date:	2024-11-04 to 2024-12-09
Issue Date:	2024-12-09
Test Standards:	IEEE Std C95.1-2019 IEEE Std 1528-2013 FCC Part 2.1093
Test Results:	PASS
Remark:	This is SAR test report

Tested by:

Min zhi Cheng

Min Zhi Cheng/ Project Handler

Approved by:

Zero Zhou/ Reviewer

The test report is effective only with both signature and specialized stamp. This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Testing Co., Ltd, this report can't be reproduced except in full. The tested sample(s) and the sample information are provided by the client.

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(Note: N/A Means Not Applicable)

1. Version

Report No.	Issue Date	Description	Approved
BCTC2411812631E	2024-12-09	Original	Valid

2. Test Standards

IEEE Std C95.1-2019: IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz. It specifies the maximum exposure limit of 1.6 W/kg as averaged over any 1 gram of tissue for portable devices being used within 20 cm of the user in the uncontrolled environment.
IEEE Std 1528-2013: IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
FCC Part 2.1093 Radiofrequency Radiation Exposure Evaluation: Portable Devices
KDB 447498 D01 General RF Exposure Guidance v06: Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies
KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04: SAR Measurement Requirements for 100 MHz to 6 GHz
KDB 865664 D02 RF Exposure Reporting v01r02: RF Exposure Compliance Reporting and Documentation Considerations

3. Test Summary

The maximum results of Specific Absorption Rate (SAR) have found during testing are as follows:

Frequency Band	Report SAR_{1g} (W/kg)	SAR_{1g} Limit (W/kg)
	Body (0mm Gap)	
GSM 850	1.017	1.6
GSM 1900	0.283	1.6
LTE Band 2	0.694	1.6
LTE Band 4	1.379	1.6
LTE Band 5	0.834	1.6
LTE Band 7	1.327	1.6
LTE Band 66	1.366	1.6

The device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-2019, and had been tested in accordance with the measurement methods and procedure specified in IEEE 1528-2013.

4. SAR Limits

FCC Limit (1g Tissue)

EXPOSURE LIMITS	SAR (W/kg)	
	(General Population / Uncontrolled Exposure Environment)	(Occupational / Controlled Exposure Environment)
Spatial Average(averaged over the whole body)	0.08	0.4
Spatial Peak(averaged over any 1 g of tissue)	1.6	8.0
Spatial Peak(hands/wrists/ feet/anklesaveraged over 10 g)	4.0	20.0

Population/Uncontrolled Environments are defined as locations where there is the exposure of individual who have no knowledge or control of their exposure.
Occupational/Controlled Environments are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure (i.e. as a result of employment or occupation).

5. Measurement Uncertainty

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is <3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k=2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

Therefore, the measurement uncertainty is not required.

6. Product Information and Test Setup

6.1 Product Information

Model/Type reference:	DOGZE 4G
Model differences:	N/A
Hardware Version:	N/A
Software Version:	N/A
Connecting I/O Port(s)	Please refer to the User's Manual
Ratings:	DC 3.7V from battery, DC 5V from USB

2G

Operation Frequency:	GPRS/EGPRS 850: TX: 824~849MHz; RX: 869~894MHz; GPRS/EGPRS 1900: TX:1850~1910MHz; RX:1930~1990MHz;
GPRS Class:	Class 12
Max RF Output Power:	GPRS 850: 33.31dBm GPRS 1900: 30.62dBm EGPRS 850: 28.07dBm EGPRS 1900: 28.24dBm
Type of Modulation:	GSM with GMSK Modulation, EGPRS with 8PSK Modulation
Type of Emission:	GPRS 850: 245KGXW GPRS 1900: 249KGXW EGPRS 850: 254KG7W EGPRS 1900: 258KG7W
Antenna installation:	FPC antenna
Antenna Gain:	GSM850: 1 dBi GSM1900: 1 dBi Remark: ☐ The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. ☒ The antenna gain of the product is provided by the customer, and the test data is affected by the customer information.

4G

Tx Frequency:	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500MHz ~ 2570MHz LTE Band 66: 1710MHz ~ 1780MHz
Rx Frequency:	LTE Band 2: 1930 MHz ~ 1990 MHz LTE Band 4: 2110 MHz ~ 2155 MHz LTE Band 5: 869 MHz ~ 894 MHz LTE Band 7: 2620MHz ~ 2690MHz LTE Band 66: 2110MHz ~ 2200MHz
Bandwidth:	LTE Band 2: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz LTE Band 4: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz LTE Band 5: 1.4MHz /3MHz /5MHz /10MHz LTE Band 7: 5MHz /10MHz /15MHz /20MHz LTE Band 66: 1.4MHz /3MHz /5MHz /10MHz /15MHz /20MHz
The Max RF Output Power (EIRP/ERP)	LTE Band 2: 25.24 dBm LTE Band 4: 23.8 dBm LTE Band 5: 22.47 dBm LTE Band 7: 25.12 dBm LTE Band 66: 24.61 dBm
99% Occupied Bandwidth:	LTE Band 2: 18M0G7D LTE Band 4: 18M0G7D LTE Band 5: 9M00G7D LTE Band 7: 17M9G7D LTE Band 66: 18M0G7D
Type of Modulation:	QPSK/16QAM
Antenna Type:	FPC Antenna
Antenna Gain:	LTE Band 2: 1 dBi LTE Band 4: 1 dBi LTE Band 5: 1 dBi LTE Band 7: 1 dBi LTE Band 66: 1 dBi

6.2 Test Setup Configuration

See test photographs attached in EUT TEST SETUP PHOTOGRAPHS for the actual connections between Product and support equipment.

6.3 Support Equipment

Cable of Product

No.	Cable Type	Quantity	Provider	Length (m)	Shielded	Note
1	--	--	Applicant	---	Yes/No	--
2	--	--	BCTC	--	Yes/No	--

No.	Device Type	Brand	Model	Series No.	Note
1.	---	---	---	---	---
2.	--	--	--	--	--

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

6.4 Test Environment

1. Normal Test Conditions:

Humidity(%):	35-75
Atmospheric Pressure(kPa):	95-105
Temperature(℃):	18-25

2. Extreme Test Conditions:
N/A

7. Test Facility and Test Instrument Used

7.1 Test Facility

All measurement facilities used to collect the measurement data are located at Shenzhen BCTC Testing Co., Ltd. Address: 1-2/F., Building B, Pengzhou Industrial Park, No.158, Fuyuan 1st Road, Zhancheng, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, China. The site and apparatus are constructed in conformance with the requirements of ANSI C63.4 and CISPR 16-1-1 other equivalent standards.

FCC Test Firm Registration Number: 712850
A2LA certificate registration number is: CN1212
ISED Registered No.: 23583
ISED CAB identifier: CN0017

7.2 Test Instrument Used

Equipment	Manufacturer	Model#	Serial#	Last Cal.	Next Cal.
PC	DELL	\	\	N/A	N/A
SAR Measurement system	SATIMO	\	\	N/A	N/A
Signal Generator	Keysight	83711B	US37100131	Aug. 29, 2024	Aug. 28, 2025
Multimeter	Keithley	1160271	\	Nov. 10, 2024	Nov 09, 2025
S-parameter Network Analyzer	R&S	ZVB 8	101353	Dec. 07, 2024	Dec. 06, 2025
Wideband Radio Communication Tester	R&S	CMW500	\	Nov. 10, 2024	Nov 09, 2025
E SAR PROBE 6GHz	MVG	SSE2	2623-EPGO-420	July 18, 2024	July 17, 2025
DIPOLE 835	SATIMO	SID 835	SN 47/21 DIP 0G835-621	Nov. 25, 2024	Nov. 24, 2027
DIPOLE 1800	SATIMO	SID 1800	SN 47/21 DIP 1G800-623	Nov. 25, 2024	Nov. 24, 2027
DIPOLE 1900	SATIMO	SID 1900	SN 47/21 DIP 1G900-624	Nov. 25, 2024	Nov. 24, 2027
DIPOLE 2600	SATIMO	SID 2600	SN 47/21 DIP 2G600-628	Nov. 25, 2024	Nov. 24, 2027
COMOSAR OPENCoaxial Probe	SATIMO	\	\	Nov. 18, 2024	Nov. 17, 2025
SAR Locator	SATIMO	\	\	Nov. 18, 2024	Nov. 17, 2025
Communication Antenna	SATIMO	\	\	Nov. 18, 2024	Nov. 17, 2025
FEATURE PHONEPOSITIONING DEVICE	SATIMO	\	\	N/A	N/A
DUMMY PROBE	SATIMO	\	\	N/A	N/A
SAM Phantom	MVG	\	SN 13/09 SAM68	N/A	N/A
Liquid measurement Kit	HP	85033D	3423A08186	N/A	N/A
Power meter	Keysight	E4419	A00065	May 16, 2024	May 15, 2025
Power sensor	Keysight	E9300A	US39211659	May 16, 2024	May 15, 2025
Power sensor	Keysight	E9300A	US39211305	May 16, 2024	May 15, 2025
Directional Coupler	Krytar 158020	131467	\	Nov. 10, 2024	Nov 09, 2025
Thermometer	BTE	\	\	Dec. 02, 2024	Dec. 01, 2025
Broad Band Tissue Simulation Liquid	Schmid	\	\	N/A	N/A

Note:
Per KDB865664D01 requirements for dipole calibration, the test laboratory has adopted three year extended calibration interval. Each measured dipole is expected to evalute with following criteria at least on annual interval.

1. There is no physical damage on the dipole;
2. System check with specific dipole is within 10% of calibrated values;
3. The most recent return-loss results, measued at least annually, deviates by no more than 20% from the previous measurement;
4. The most recent measurement of the real or imaginary parts of the impedance, measured at least annually is within 5Ω from the provious measurement.

Network analyzer probe calibration against air, distilled water and a shorting block performed before measuring liquid parameters.

8. Specific Absorption Rate (SAR)

8.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techiques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

8.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\mathbf{SAR} = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\mathbf{dm}}\right) = \frac{\mathbf{d}}{\mathbf{dt}}\left(\frac{\mathbf{dW}}{\boldsymbol{\rho}\mathbf{dv}}\right)$$

SAR is expressed in units of Watts per kilogram (W/kg)

SAR measurement can be either related to the temperature elevation in tissue by

$$\mathbf{SAR} = \mathbf{C}\left(\frac{\boldsymbol{\delta}\mathbf{T}}{\boldsymbol{\delta}\mathbf{t}}\right)$$

Where: C is the specific heat capacity, δ T is the temperature rise and δ t is the exposure duration, or related to the

electrical field in the tissue by

$$\mathbf{SAR} = \frac{\boldsymbol{\sigma}|\mathbf{E}|^2}{\boldsymbol{\rho}}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

However for evaluating SAR of low power transmitter, electrical field measurement is typically applied.

9. SAR Measurement System

9.1 The Measurement System

Comosar is a system that is able to determine the SAR distribution inside a phantom of human being according to different standards. The Comosar system consists of the following items:
- Main computer to control all the system
- 6 axis robot
- Data acquisition system
- Miniature E-field probe
- Phone holder
- Head simulating tissue

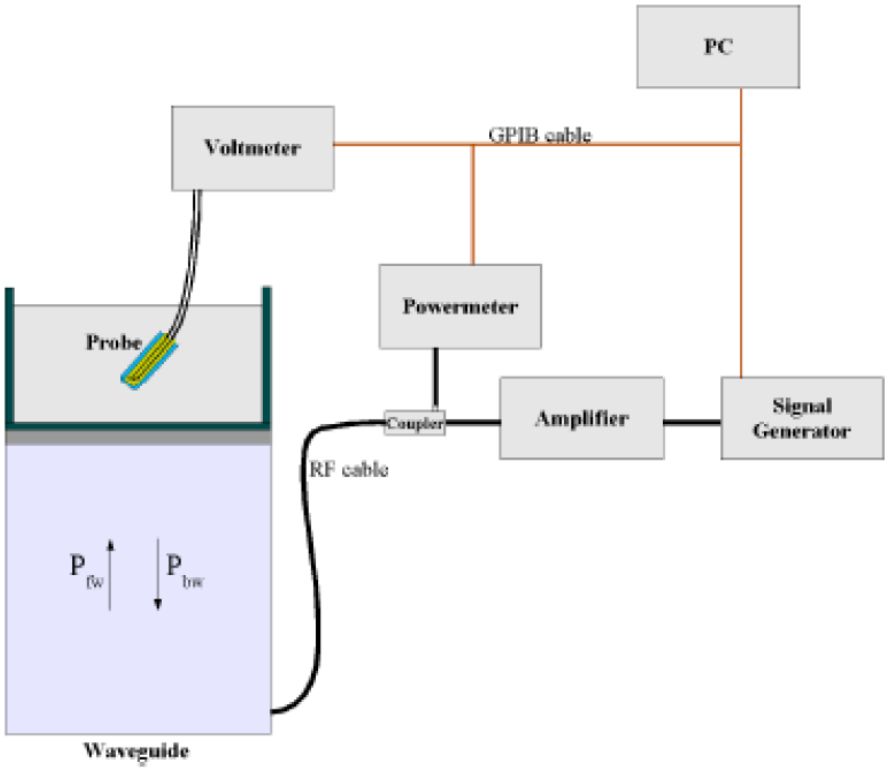
The following figure shows the system.

The EUT under test operating at the maximum power level is placed in the phone holder, under the phantom, which is filled with head simulating liquid. The E-Field probe measures the electric field inside the phantom. The OpenSAR software computes the results to give a SAR value in a 1g or 10g mass.

9.2 Probe

For the measurements the Specific Dosimetric E-Field Probe SN 46/21 EPGO362 with following specifications is used
- Dynamic range: 0.01-100 W/kg
- Tip Diameter : 5 mm
- Distance between probe tip and sensor center: 2.10mm
- Distance between sensor center and the inner phantom surface: 4 mm (repeatability better than +/- 1mm)
- Probe linearity: ＜0.25 dB
- Axial Isotropy: ＜0.25 dB
- Spherical Isotropy: ＜0.50 dB
- Calibration range: 835 to 2500MHz for head & body simulating liquid.

Angle between probe axis (evaluation axis) and surface normal line:1ess than 30°
Probe calibration is realized, in compliance with EN 62209-1 and IEEE 1528 STD, with CALISAR, Antennessa proprietary calibration system. The calibration is performed with the EN 62209-1 annex technique using reference guide at the five frequencies.



$$SAR = \frac{4(p_{\int w} - p_{Pbw})}{ab\delta} cos^2 \left(\pi \frac{y}{a}\right) c^{(2\pi/\delta)}$$

Where :
Pfw = Forward Power
Pbw = Backward Power
a and b =Waveguide dimensions
l = Skin depth

Keithley configuration:
Rate = Medium; Filter = ON; RDGS = 10; Filter type = Moving Average; Range auto after each calibration, a SAR measurement is performed on a validation dipole and compared with a NPL calibrated probe, to verify it.

The calibration factors, CF(N), for the 3 sensors corresponding to dipole 1, dipole 2 and dipole 3 are:

CF(N)=SAR(N)/Vlin(N) (N=1,2,3)

The linearised output voltage Vlin(N) is obtained from the displayed output voltage V(N) using

Vlin(N)=V(N)*(1+V(N)/DCP(N)) (N=1,2,3)

where DCP is the diode compression point in mV.

9.3 Probe Calibration Process

Dosimetric Assessment Procedure
Each E-Probe/Probe Amplifier combination has unique calibration parameters. SATIMO Probe calibration procedure is conducted to determine the proper amplifier settings to enter in the probe parameters. The amplifier settings are determined for a given frequency by subjecting the probe to a known E-field density (1 mW/cm2) using an with CALISAR, Antenna proprietary calibration system.

Free Space Assessment Procedure
The free space E-field from amplified probe outputs is determined in a test chamber. This calibration can be performed in a TEM cell if the frequency is below 1 GHz and in a waveguide or other methodologies above 1 GHz for free space. For the free space calibration, the probe is placed in the volumetric center of the cavity and at the proper orientation with the field. The probe is rotated 360 degrees until the three channels show the maximum reading. The power density readings equates to 1mW/cm2.

Temperature Assessment Procedure
E-field temperature correlation calibration is performed in a flat phantom filled with the appropriate simulated head tissue. The E-field in the medium correlates with the temperature rise in the dielectric medium. For temperature correlation calibration a RF transparent thermistor-based temperature probe is used in conjunction with the E-field probe.

$$SAR = C\frac{\Delta T}{\Delta t}$$

Where:
Δt = exposure time (30 seconds),
C = heat capacity of tissue (brain or muscle),
ΔT = temperature increase due to RF exposure.

SAR is proportional to ΔT/Δt, the initial rate of tissue heating, before thermal diffusion takes place. The electric field in the simulated tissue can be used to estimate SAR by equating the thermally derived SAR to that with the E- field component.

$$SAR = \frac{|E|^2 \cdot \sigma}{\rho}$$

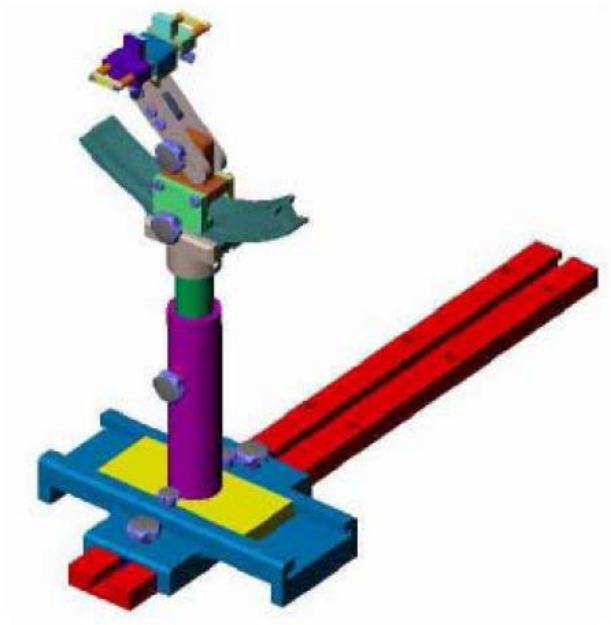
Where:
σ = simulated tissue conductivity,
ρ = Tissue density (1.25 g/cm3 for brain tissue)

9.4 Phantom

For the measurements the Specific Anthropomorphic Mannequin (SAM) defined by the IEEE SCC-34/SC2 group is used. The phantom is a polyurethane shell integrated in a wooden table. The thickness of the phantom amounts to 2mm +/- 0.2mm. It enables the dosimetric evaluation of left and right phone usage and includes an additional flat phantom part for the simplified performance check. The phantom set-up includes a cover, which prevents the evaporation of the liquid.

9.5 Device Holder

The positioning system allows obtaining cheek and tilting position with a very good accuracy. In compliance with CENELEC, the tilt angle uncertainty is lower than 1°.



System Material	Permittivity	Loss Tangent
Delrin	3.7	0.005

10. Tissue Simulating Liquids

10.1 Composition of Tissue Simulating Liquid

For the measurement of the field distribution inside the SAM phantom with SMTIMO, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm. Please see the following photos for the liquid height.

Liquid Height for Body SAR

The Composition of Tissue Simulating Liquid

Frequency (MHz)	Water (%)	Salt (%)	1,2-Propane diol (%)	HEC (%)	Preventol (%)	DGBE (%)
Head/Body						
835	40.3	1.4	57.9	0.2	0.2	0
900	40.3	1.4	57.9	0.2	0.2	0
1800-2000	55.2	0.3	0	0	0	44.5
2450	55.0	0.1	0	0	0	44.9
2600	54.9	0.1	0	0	0	45.0

Frequency (MHz)	Water (%)	Hexyl Carbitol (%)	Triton X-100 (%)
Head/Body			
5000-6000	65.52	17.24	17.24

10.2 Limit

The head tissue dielectric parameters recommended by the IEEE SCC-34/SC-2 in P1528 have been incorporated in the following table. These head parameters are derived from planar layer models simulating the highest expected SAR for the dielectric properties and tissue thickness variations in a human head. Other head and body tissue parameters that have not been specified in P1528 are derived from the tissue dielectric parameters

computed from the 4-Cole-Cole equations described in Reference [12] and extrapolated according to the head parameters specified in P1528.

Target Frequency (MHz)	Head	
	Conductivity (σ)	Permittivity (ε_r)
150	0.76	52.3
300	0.87	45.3
450	0.87	43.5
750	0.89	41.9
835	0.90	41.5
900	0.97	41.5
915	0.98	41.5
1450	1.20	40.5
1610	1.29	40.3
1800-2000	1.40	40.0
2450	1.80	39.2
2600	1.96	39.0
3000	2.40	38.5
5200	4.66	36.0
5400	4.86	35.8
5600	5.07	35.5
5800	5.27	35.3

10.3 Tissue Calibration Result

The dielectric parameters of the liquids were verified prior to the SAR evaluation using an R&S ZVB 8. Dielectric Probe Kit and an Agilent Network Analyzer.

Calibration Result for Dielectric Parameters of Tissue Simulating Liquid

Frequency (MHz)	Liquid	Target (σ)	Target (εr)	Measured (σ)	Measured (εr)	Delta (σ)%	Delta (εr)%	Limit (%)	Temp .TSL (°C)	Date
835	Head	0.90	41.50	0.886	42.489	-1.56	2.38	±5	23.5	29/11/2024
1800	Head	1.40	40.00	1.427	39.532	1.93	-1.17	±5	23.5	6/12/2024
1900	Head	1.40	40.00	1.434	41.310	2.43	3.28	±5	23.5	6/12/2024
2600	Head	1.96	39.00	1.887	39.374	-3.72	0.96	±5	23.5	29/11/2024

Remark:

1. The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.
2. The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The parameters should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.

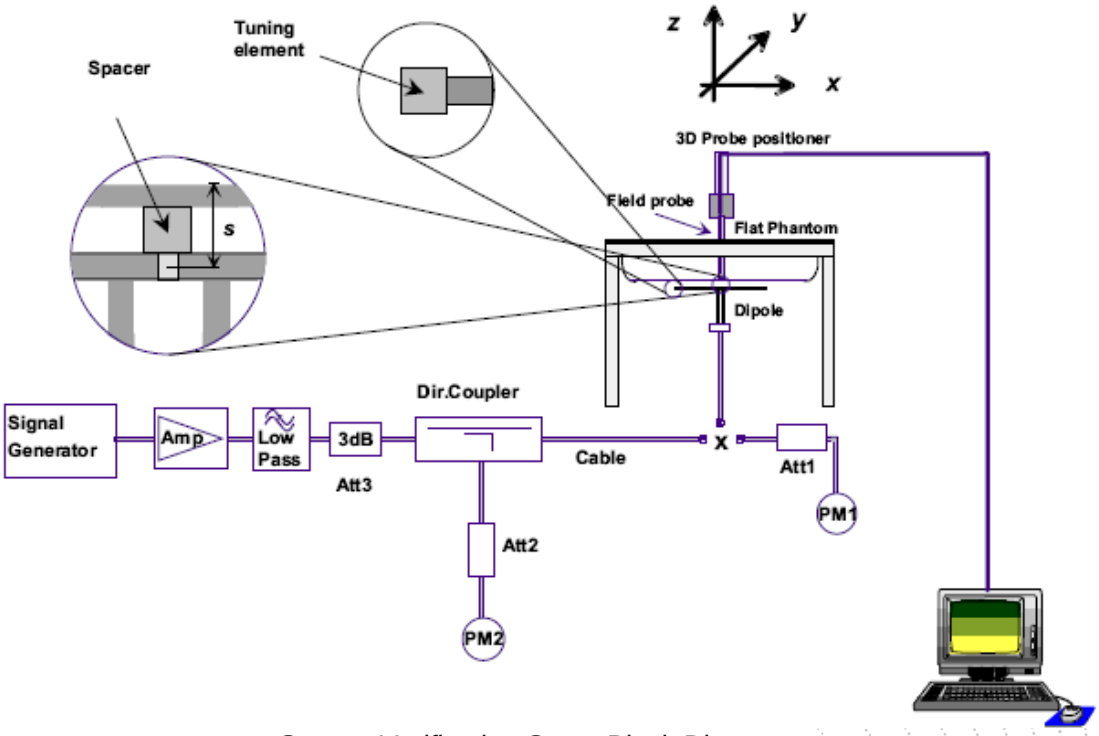
11. System Check

11.1 Purpose of System Performance Check

At the device test frequencies. System check verifies the measurement repeatability of a SAR system before compliance testing and is not a validation of all system specifications. The latter is not required for testing a device but is mandatory before the system is deployed. The system check detects possible short-term drift and unacceptable measurement errors or uncertainties in the system.

11.2 System Setup

In the simplified setup for system evaluation, the EUT is replaced by a calibrated dipole and the power source is replaced by a continuous wave which comes from a signal generator at frequency 600MHz-6000MHz. The calibrated dipole must be placed beneath the flat phantom section of the SAM twin phantom with the correct distance holder. The distance holder should touch the phantom surface with a light pressure at the reference marking and be oriented parallel to the long side of the phantom. The output power on dipole port must be calibrated to 20 dBm (100 mW) before dipole is connected.



System Verification Setup Block Diagram

Setup Photo of Dipole Antenna

11.3 Validation Results

Comparing to the original SAR value provided by SATIMO, the validation data should be within its specification of 10 %. The following table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion.

Frequency (MHz)	Power	Measured SAR_{1g} (W/Kg)	Normalize to 1 Watt	Drift (%)	1W Target SAR_{1g} (W/Kg)	Difference Percentage (%)	Limit (%)	Liquid Temp	Date
835	250mW	2.488	9.951	-2.060	10.01	-0.589	±10	23.2	29/11/2024
1800	250mW	9.786	39.145	2.300	39.74	-1.497	±10	23.3	6/12/2024
1900	250mW	9.869	39.474	-0.736	41.26	-4.329	±10	23.3	6/12/2024
2600	250mW	14.566	58.262	1.056	56.5	3.119	±10	23.2	29/11/2024

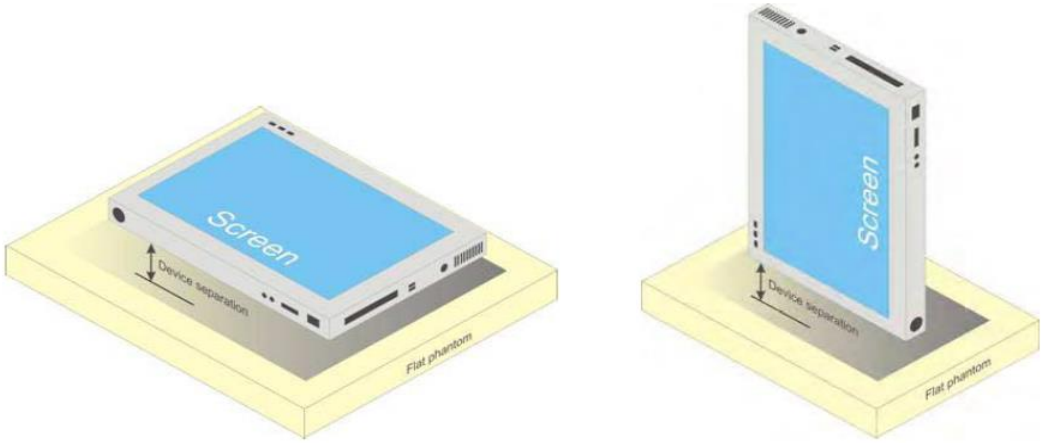
12. EUT Testing Position

Body Position

A typical example of a body supported device is a wireless enabled laptop device that among other orientations may be supported on the thighs of a sitting user. To represent this orientation, the device shall be positioned with its base against the flat phantom. Other orientations may be specified by the manufacturer in the user instructions. If the intended use is not specified, the device shall be tested directly against the flat phantom in all usable orientations.

The example shows a tablet form factor portable computer for which SAR should be separately assessed with

a). each surface and
b). the separation distances



Tablet form factor portable computer

13. SAR Measurement Procedures

13.1 Measurement Procedures

The measurement procedures are as follows:
(a) Use base station simulator (if applicable) or engineering software to transmit RF power continuously (continuous Tx) in the highest power channel.
(b) Keep EUT to radiate maximum output power or 100% factor (if applicable)
(c) Measure output power through RF cable and power meter.
(d) Place the EUT in the positions as Annex D demonstrates.
(e) Set scan area, grid size and other setting on the SATIMO software.
(f) Measure SAR results for the highest power channel on each testing position.
(g) Find out the largest SAR result on these testing positions of each band
(h) Measure SAR results for other channels in worst SAR testing position if the SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:
(a) Power reference measurement
(b) Area scan
(c) Zoom scan
(d) Power drift measurement

13.2 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The SATIMO software includes all numerical procedures necessary to evaluate the spatial peak SAR value.
The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.
The entire evaluation of the spatial peak values is performed within the post-processing engine. The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:
(a) Extraction of the measured data (grid and values) from the Zoom Scan
(b) Calculation of the SAR value at every measurement point based on all stored data
(c) Generation of a high-resolution mesh within the measured volume
(d) Interpolation of all measured values form the measurement grid to the high-resolution grid
(e) Extrapolation of the entire 3D field distribution to the phantom surface over the distance from sensor to surface
(f) Calculation of the averaged SAR within masses of 1g and 10g

13.3 Area & Zoom Scan Procedures

First Area Scan is used to locate the approximate location(s) of the local peak SAR value(s). The measurement grid within an Area Scan is defined by the grid extent, grid step size and grid offset. Next, in order to determine the EM field distribution in a three-dimensional spatial extension, Zoom Scan is required. The Zoom Scan measures 5x5x7 points with step size 8, 8 and 5 mm for 300 MHz to 3 GHz, and 8x8x8 points with step size 4, 4 and 2.5 mm for 3 GHz to 6 GHz. The Zoom Scan is performed around the highest E-field value to determine the averaged SAR-distribution over 10 g.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 mm ± 1 mm	½·δ·ln(2) mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

13.4 Volume Scan Procedures

The volume scan is used for assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing (step-size is 4, 4 and 2.5 mm). When all volume scan were completed, the software can combine and subsequently superpose these measurement data to calculating the multiband SAR.

13.5 SAR Averaged Methods

The local SAR inside the phantom is measured using small dipole sensing elements inside a probe body. The probe tip must not be in contact with the phantom surface in order to minimize measurements errors, but the highest local SAR will occur at the surface of the phantom.

An extrapolation is using to determinate this highest local SAR values. The extrapolation is based on a fourth-order least-square polynomial fit of measured data. The local SAR value is then extrapolated from the liquid surface with a 1mm step.

The measurements have to be performed over a limited time (due to the duration of the battery) so the step of measurement is high. It could vary between 5 and 8 mm. To obtain an accurate assessment of the maximum SAR averaged over 10g and 1 g requires a very fine resolution in the three dimensional scanned data array.

13.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In SATIMO measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drift more than 5%, the SAR will be retested.

14. SAR Test Result

14.1 Conducted RF Output Power

GSM - Burst Average Power (dBm)								
Band	**GSM850**			**Tune-up**	**GSM1900**			**Tune-up**
Channel	**128**	**190**	**251**		**512**	**661**	**810**	
Frequency (MHz)	**824.2**	**836.6**	**848.8**		**1850.2**	**1880**	**1909.8**	
GPRS Slot -1	33.04	33.31	33.31	33.5	30.62	30.56	30.35	31.0
GPRS Slot -2	32.94	33.13	33.20	33.5	30.56	30.51	30.30	31.0
GPRS Slot -3	31.33	31.57	**31.68**	32.0	29.39	**29.46**	29.20	30.0
GPRS Slot -4	29.56	29.74	29.90	30.0	27.64	27.83	27.37	28.0
EGPRS Slot -1	27.19	27.84	28.07	28.5	27.50	28.24	27.03	28.5
EGPRS Slot -2	25.49	26.27	26.56	27.0	25.36	26.35	25.53	26.5
EGPRS Slot -3	23.62	24.49	24.10	24.5	23.07	24.58	23.61	25.0
EGPRS Slot -4	21.05	21.83	22.14	22.0	21.39	22.37	21.51	22.5

GSM - Source-Based Time-Average Power (dBm)						
Band	**GSM850**			**GSM1900**		
Channel	**128**	**190**	**251**	**512**	**661**	**810**
Frequency (MHz)	**824.2**	**836.6**	**848.8**	**1850.2**	**1880**	**1909.8**
GPRS Slot -1	24.04	24.31	24.31	21.62	21.56	21.35
GPRS Slot -2	26.94	27.13	27.20	24.56	24.51	24.30
GPRS Slot -3	27.08	27.32	**27.43**	25.14	**25.21**	24.95
GPRS Slot -4	26.56	26.74	26.90	24.64	24.83	24.37
EGPRS Slot -1	18.19	18.84	19.07	18.50	19.24	18.03
EGPRS Slot -2	19.49	20.27	20.56	19.36	20.35	19.53
EGPRS Slot -3	19.37	20.24	19.85	18.82	20.33	19.36
EGPRS Slot -4	18.05	18.83	19.14	18.39	19.37	18.51

Notes:
Division Factors
To average the power, the division factor is as follows:
1TX-slots = 1 transmit time slot out of 8 time slots=> conducted power divided by (8/1) => -9.00dB
2TX-slots = 2 transmit time slots out of 8 time slots=> conducted power divided by (8/2) => -6.00dB
3TX-slots = 3 transmit time slots out of 8 time slots=> conducted power divided by (8/3) => -4.26dB
4TX-slots = 4 transmit time slots out of 8 time slots=> conducted power divided by (8/4) => -3.00dB

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	Gain (dBm)	EIRP (dBm)	Verdict
Band2	1.4	18607	1	#0	QPSK	21.22	1	22.22	PASS
Band2	1.4	18607	1	#Mid	QPSK	21.17	1	22.17	PASS
Band2	1.4	18607	1	#Max	QPSK	21.08	1	22.08	PASS
Band2	1.4	18607	3	#0	QPSK	20.95	1	21.95	PASS
Band2	1.4	18607	3	#Mid	QPSK	20.93	1	21.93	PASS
Band2	1.4	18607	3	#Max	QPSK	20.92	1	21.92	PASS
Band2	1.4	18607	6	#0	QPSK	19.89	1	20.89	PASS
Band2	1.4	18607	1	#0	16QAM	20.22	1	21.22	PASS
Band2	1.4	18607	1	#Mid	16QAM	20.20	1	21.20	PASS
Band2	1.4	18607	1	#Max	16QAM	20.20	1	21.20	PASS
Band2	1.4	18607	3	#0	16QAM	20.16	1	21.16	PASS
Band2	1.4	18607	3	#Mid	16QAM	20.15	1	21.15	PASS
Band2	1.4	18607	3	#Max	16QAM	20.11	1	21.11	PASS
Band2	1.4	18607	6	#0	16QAM	19.20	1	20.20	PASS
Band2	1.4	18900	1	#0	QPSK	23.00	1	24.00	PASS
Band2	1.4	18900	1	#Mid	QPSK	22.97	1	23.97	PASS
Band2	1.4	18900	1	#Max	QPSK	22.90	1	23.90	PASS
Band2	1.4	18900	3	#0	QPSK	22.95	1	23.95	PASS
Band2	1.4	18900	3	#Mid	QPSK	22.90	1	23.90	PASS
Band2	1.4	18900	3	#Max	QPSK	22.86	1	23.86	PASS
Band2	1.4	18900	6	#0	QPSK	21.91	1	22.91	PASS
Band2	1.4	18900	1	#0	16QAM	22.24	1	23.24	PASS
Band2	1.4	18900	1	#Mid	16QAM	22.18	1	23.18	PASS
Band2	1.4	18900	1	#Max	16QAM	22.15	1	23.15	PASS
Band2	1.4	18900	3	#0	16QAM	22.22	1	23.22	PASS
Band2	1.4	18900	3	#Mid	16QAM	22.22	1	23.22	PASS
Band2	1.4	18900	3	#Max	16QAM	22.17	1	23.17	PASS
Band2	1.4	18900	6	#0	16QAM	21.19	1	22.19	PASS
Band2	1.4	19193	1	#0	QPSK	22.91	1	23.91	PASS
Band2	1.4	19193	1	#Mid	QPSK	22.76	1	23.76	PASS
Band2	1.4	19193	1	#Max	QPSK	22.49	1	23.49	PASS
Band2	1.4	19193	3	#0	QPSK	22.63	1	23.63	PASS
Band2	1.4	19193	3	#Mid	QPSK	22.58	1	23.58	PASS
Band2	1.4	19193	3	#Max	QPSK	22.46	1	23.46	PASS
Band2	1.4	19193	6	#0	QPSK	21.59	1	22.59	PASS
Band2	1.4	19193	1	#0	16QAM	21.66	1	22.66	PASS
Band2	1.4	19193	1	#Mid	16QAM	21.60	1	22.60	PASS
Band2	1.4	19193	1	#Max	16QAM	21.50	1	22.50	PASS
Band2	1.4	19193	3	#0	16QAM	21.84	1	22.84	PASS
Band2	1.4	19193	3	#Mid	16QAM	21.81	1	22.81	PASS
Band2	1.4	19193	3	#Max	16QAM	21.77	1	22.77	PASS
Band2	1.4	19193	6	#0	16QAM	20.82	1	21.82	PASS
Band2	3	18615	1	#0	QPSK	20.83	1	21.83	PASS
Band2	3	18615	1	#Mid	QPSK	20.82	1	21.82	PASS
Band2	3	18615	1	#Max	QPSK	20.69	1	21.69	PASS
Band2	3	18615	8	#0	QPSK	19.72	1	20.72	PASS
Band2	3	18615	8	#Mid	QPSK	19.75	1	20.75	PASS
Band2	3	18615	8	#Max	QPSK	19.74	1	20.74	PASS
Band2	3	18615	15	#0	QPSK	19.68	1	20.68	PASS
Band2	3	18615	1	#0	16QAM	20.17	1	21.17	PASS
Band2	3	18615	1	#Mid	16QAM	20.27	1	21.27	PASS
Band2	3	18615	1	#Max	16QAM	20.16	1	21.16	PASS
Band2	3	18615	8	#0	16QAM	18.85	1	19.85	PASS
Band2	3	18615	8	#Mid	16QAM	18.88	1	19.88	PASS

Band2	3	18615	8	#Max	16QAM	18.88	1	19.88	PASS
Band2	3	18615	15	#0	16QAM	18.86	1	19.86	PASS
Band2	3	18900	1	#0	QPSK	22.95	1	23.95	PASS
Band2	3	18900	1	#Mid	QPSK	22.82	1	23.82	PASS
Band2	3	18900	1	#Max	QPSK	22.65	1	23.65	PASS
Band2	3	18900	8	#0	QPSK	21.89	1	22.89	PASS
Band2	3	18900	8	#Mid	QPSK	21.85	1	22.85	PASS
Band2	3	18900	8	#Max	QPSK	21.77	1	22.77	PASS
Band2	3	18900	15	#0	QPSK	21.82	1	22.82	PASS
Band2	3	18900	1	#0	16QAM	22.16	1	23.16	PASS
Band2	3	18900	1	#Mid	16QAM	22.09	1	23.09	PASS
Band2	3	18900	1	#Max	16QAM	21.91	1	22.91	PASS
Band2	3	18900	8	#0	16QAM	20.98	1	21.98	PASS
Band2	3	18900	8	#Mid	16QAM	20.99	1	21.99	PASS
Band2	3	18900	8	#Max	16QAM	20.88	1	21.88	PASS
Band2	3	18900	15	#0	16QAM	20.91	1	21.91	PASS
Band2	3	19185	1	#0	QPSK	22.97	1	23.97	PASS
Band2	3	19185	1	#Mid	QPSK	22.83	1	23.83	PASS
Band2	3	19185	1	#Max	QPSK	22.44	1	23.44	PASS
Band2	3	19185	8	#0	QPSK	21.84	1	22.84	PASS
Band2	3	19185	8	#Mid	QPSK	21.83	1	22.83	PASS
Band2	3	19185	8	#Max	QPSK	21.70	1	22.70	PASS
Band2	3	19185	15	#0	QPSK	21.79	1	22.79	PASS
Band2	3	19185	1	#0	16QAM	21.86	1	22.86	PASS
Band2	3	19185	1	#Mid	16QAM	21.76	1	22.76	PASS
Band2	3	19185	1	#Max	16QAM	21.46	1	22.46	PASS
Band2	3	19185	8	#0	16QAM	20.85	1	21.85	PASS
Band2	3	19185	8	#Mid	16QAM	20.86	1	21.86	PASS
Band2	3	19185	8	#Max	16QAM	20.66	1	21.66	PASS
Band2	3	19185	15	#0	16QAM	20.90	1	21.90	PASS
Band2	5	18625	1	#0	QPSK	21.18	1	22.18	PASS
Band2	5	18625	1	#Mid	QPSK	20.99	1	21.99	PASS
Band2	5	18625	1	#Max	QPSK	21.13	1	22.13	PASS
Band2	5	18625	12	#0	QPSK	19.75	1	20.75	PASS
Band2	5	18625	12	#Mid	QPSK	19.87	1	20.87	PASS
Band2	5	18625	12	#Max	QPSK	19.84	1	20.84	PASS
Band2	5	18625	25	#0	QPSK	19.82	1	20.82	PASS
Band2	5	18625	1	#0	16QAM	20.58	1	21.58	PASS
Band2	5	18625	1	#Mid	16QAM	20.62	1	21.62	PASS
Band2	5	18625	1	#Max	16QAM	20.65	1	21.65	PASS
Band2	5	18625	12	#0	16QAM	18.86	1	19.86	PASS
Band2	5	18625	12	#Mid	16QAM	18.99	1	19.99	PASS
Band2	5	18625	12	#Max	16QAM	18.94	1	19.94	PASS
Band2	5	18625	25	#0	16QAM	18.84	1	19.84	PASS
Band2	5	18900	1	#0	QPSK	23.39	1	24.39	PASS
Band2	5	18900	1	#Mid	QPSK	23.07	1	24.07	PASS
Band2	5	18900	1	#Max	QPSK	22.92	1	23.92	PASS
Band2	5	18900	12	#0	QPSK	21.98	1	22.98	PASS
Band2	5	18900	12	#Mid	QPSK	21.96	1	22.96	PASS
Band2	5	18900	12	#Max	QPSK	21.77	1	22.77	PASS
Band2	5	18900	25	#0	QPSK	21.92	1	22.92	PASS
Band2	5	18900	1	#0	16QAM	22.54	1	23.54	PASS
Band2	5	18900	1	#Mid	16QAM	22.37	1	23.37	PASS
Band2	5	18900	1	#Max	16QAM	22.15	1	23.15	PASS
Band2	5	18900	12	#0	16QAM	21.02	1	22.02	PASS
Band2	5	18900	12	#Mid	16QAM	21.02	1	22.02	PASS
Band2	5	18900	12	#Max	16QAM	20.83	1	21.83	PASS

Band2	5	18900	25	#0	16QAM	21.00	1	22.00	PASS
Band2	5	19175	1	#0	QPSK	23.29	1	24.29	PASS
Band2	5	19175	1	#Mid	QPSK	22.98	1	23.98	PASS
Band2	5	19175	1	#Max	QPSK	22.78	1	23.78	PASS
Band2	5	19175	12	#0	QPSK	22.01	1	23.01	PASS
Band2	5	19175	12	#Mid	QPSK	22.13	1	23.13	PASS
Band2	5	19175	12	#Max	QPSK	21.81	1	22.81	PASS
Band2	5	19175	25	#0	QPSK	21.97	1	22.97	PASS
Band2	5	19175	1	#0	16QAM	22.56	1	23.56	PASS
Band2	5	19175	1	#Mid	16QAM	22.41	1	23.41	PASS
Band2	5	19175	1	#Max	16QAM	22.05	1	23.05	PASS
Band2	5	19175	12	#0	16QAM	21.06	1	22.06	PASS
Band2	5	19175	12	#Mid	16QAM	21.11	1	22.11	PASS
Band2	5	19175	12	#Max	16QAM	20.89	1	21.89	PASS
Band2	5	19175	25	#0	16QAM	20.92	1	21.92	PASS
Band2	10	18650	1	#0	QPSK	21.21	1	22.21	PASS
Band2	10	18650	1	#Mid	QPSK	21.18	1	22.18	PASS
Band2	10	18650	1	#Max	QPSK	21.75	1	22.75	PASS
Band2	10	18650	25	#0	QPSK	19.62	1	20.62	PASS
Band2	10	18650	25	#Mid	QPSK	19.91	1	20.91	PASS
Band2	10	18650	25	#Max	QPSK	20.03	1	21.03	PASS
Band2	10	18650	50	#0	QPSK	19.81	1	20.81	PASS
Band2	10	18900	1	#0	QPSK	23.50	1	24.50	PASS
Band2	10	18900	1	#Mid	QPSK	23.02	1	24.02	PASS
Band2	10	18900	1	#Max	QPSK	22.67	1	23.67	PASS
Band2	10	18900	25	#0	QPSK	21.90	1	22.90	PASS
Band2	10	18900	25	#Mid	QPSK	21.88	1	22.88	PASS
Band2	10	18900	25	#Max	QPSK	21.50	1	22.50	PASS
Band2	10	18900	50	#0	QPSK	21.71	1	22.71	PASS
Band2	10	19150	1	#0	QPSK	22.60	1	23.60	PASS
Band2	10	19150	1	#Mid	QPSK	23.21	1	24.21	PASS
Band2	10	19150	1	#Max	QPSK	23.05	1	24.05	PASS
Band2	10	19150	25	#0	QPSK	21.56	1	22.56	PASS
Band2	10	19150	25	#Mid	QPSK	22.00	1	23.00	PASS
Band2	10	19150	25	#Max	QPSK	21.85	1	22.85	PASS
Band2	10	19150	50	#0	QPSK	21.75	1	22.75	PASS
Band2	15	18675	1	#0	QPSK	21.82	1	22.82	PASS
Band2	15	18675	1	#Mid	QPSK	22.02	1	23.02	PASS
Band2	15	18675	1	#Max	QPSK	23.01	1	24.01	PASS
Band2	15	18675	36	#0	QPSK	20.64	1	21.64	PASS
Band2	15	18675	36	#Mid	QPSK	20.99	1	21.99	PASS
Band2	15	18675	36	#Max	QPSK	21.41	1	22.41	PASS
Band2	15	18675	75	#0	QPSK	22.09	1	23.09	PASS
Band2	15	18900	1	#0	QPSK	24.24	1	25.24	PASS
Band2	15	18900	1	#Mid	QPSK	23.78	1	24.78	PASS
Band2	15	18900	1	#Max	QPSK	23.11	1	24.11	PASS
Band2	15	18900	36	#0	QPSK	22.94	1	23.94	PASS
Band2	15	18900	36	#Mid	QPSK	22.80	1	23.80	PASS
Band2	15	18900	36	#Max	QPSK	22.37	1	23.37	PASS
Band2	15	18900	75	#0	QPSK	23.25	1	24.25	PASS
Band2	15	19125	1	#0	QPSK	22.71	1	23.71	PASS
Band2	15	19125	1	#Mid	QPSK	23.38	1	24.38	PASS
Band2	15	19125	1	#Max	QPSK	23.49	1	24.49	PASS
Band2	15	19125	36	#0	QPSK	21.71	1	22.71	PASS
Band2	15	19125	36	#Mid	QPSK	22.30	1	23.30	PASS
Band2	15	19125	36	#Max	QPSK	22.53	1	23.53	PASS
Band2	15	19125	75	#0	QPSK	23.66	1	24.66	PASS

Band2	20	18700	1	#0	QPSK	21.81	1	22.81	PASS
Band2	20	18700	1	#Mid	QPSK	22.45	1	23.45	PASS
Band2	20	18700	1	#Max	QPSK	23.78	1	24.78	PASS
Band2	20	18700	50	#0	QPSK	20.64	1	21.64	PASS
Band2	20	18700	50	#Mid	QPSK	21.30	1	22.30	PASS
Band2	20	18700	50	#Max	QPSK	21.90	1	22.90	PASS
Band2	20	18700	100	#0	QPSK	22.41	1	23.41	PASS
Band2	20	18900	1	#0	QPSK	24.18	1	25.18	PASS
Band2	20	18900	1	#Mid	QPSK	23.83	1	24.83	PASS
Band2	20	18900	1	#Max	QPSK	22.96	1	23.96	PASS
Band2	20	18900	50	#0	QPSK	22.82	1	23.82	PASS
Band2	20	18900	50	#Mid	QPSK	22.70	1	23.70	PASS
Band2	20	18900	50	#Max	QPSK	22.16	1	23.16	PASS
Band2	20	18900	100	#0	QPSK	23.05	1	24.05	PASS
Band2	20	19100	1	#0	QPSK	22.89	1	23.89	PASS
Band2	20	19100	1	#Mid	QPSK	22.93	1	23.93	PASS
Band2	20	19100	1	#Max	QPSK	23.52	1	24.52	PASS
Band2	20	19100	50	#0	QPSK	21.56	1	22.56	PASS
Band2	20	19100	50	#Mid	QPSK	21.78	1	22.78	PASS
Band2	20	19100	50	#Max	QPSK	22.32	1	23.32	PASS
Band2	20	19100	100	#0	QPSK	23.54	1	24.54	PASS

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	Gain (dBm)	EIRP (dBm)	Verdict
Band4	1.4	19957	1	#0	QPSK	21.61	1	22.61	PASS
Band4	1.4	19957	1	#Mid	QPSK	21.54	1	22.54	PASS
Band4	1.4	19957	1	#Max	QPSK	21.36	1	22.36	PASS
Band4	1.4	19957	3	#0	QPSK	21.34	1	22.34	PASS
Band4	1.4	19957	3	#Mid	QPSK	21.32	1	22.32	PASS
Band4	1.4	19957	3	#Max	QPSK	21.23	1	22.23	PASS
Band4	1.4	19957	6	#0	QPSK	20.37	1	21.37	PASS
Band4	1.4	19957	1	#0	16QAM	20.71	1	21.71	PASS
Band4	1.4	19957	1	#Mid	16QAM	20.65	1	21.65	PASS
Band4	1.4	19957	1	#Max	16QAM	20.64	1	21.64	PASS
Band4	1.4	19957	3	#0	16QAM	20.68	1	21.68	PASS
Band4	1.4	19957	3	#Mid	16QAM	20.63	1	21.63	PASS
Band4	1.4	19957	3	#Max	16QAM	20.59	1	21.59	PASS
Band4	1.4	19957	6	#0	16QAM	19.75	1	20.75	PASS
Band4	1.4	20175	1	#0	QPSK	22.08	1	23.08	PASS
Band4	1.4	20175	1	#Mid	QPSK	22.11	1	23.11	PASS
Band4	1.4	20175	1	#Max	QPSK	22.11	1	23.11	PASS
Band4	1.4	20175	3	#0	QPSK	22.07	1	23.07	PASS
Band4	1.4	20175	3	#Mid	QPSK	22.07	1	23.07	PASS
Band4	1.4	20175	3	#Max	QPSK	22.10	1	23.10	PASS
Band4	1.4	20175	6	#0	QPSK	21.15	1	22.15	PASS
Band4	1.4	20175	1	#0	16QAM	21.36	1	22.36	PASS
Band4	1.4	20175	1	#Mid	16QAM	21.39	1	22.39	PASS
Band4	1.4	20175	1	#Max	16QAM	21.49	1	22.49	PASS
Band4	1.4	20175	3	#0	16QAM	21.40	1	22.40	PASS
Band4	1.4	20175	3	#Mid	16QAM	21.44	1	22.44	PASS
Band4	1.4	20175	3	#Max	16QAM	21.47	1	22.47	PASS
Band4	1.4	20175	6	#0	16QAM	20.39	1	21.39	PASS
Band4	1.4	20393	1	#0	QPSK	22.04	1	23.04	PASS
Band4	1.4	20393	1	#Mid	QPSK	21.99	1	22.99	PASS
Band4	1.4	20393	1	#Max	QPSK	21.88	1	22.88	PASS
Band4	1.4	20393	3	#0	QPSK	21.89	1	22.89	PASS
Band4	1.4	20393	3	#Mid	QPSK	21.86	1	22.86	PASS
Band4	1.4	20393	3	#Max	QPSK	21.83	1	22.83	PASS
Band4	1.4	20393	6	#0	QPSK	20.97	1	21.97	PASS
Band4	1.4	20393	1	#0	16QAM	20.96	1	21.96	PASS
Band4	1.4	20393	1	#Mid	16QAM	20.98	1	21.98	PASS
Band4	1.4	20393	1	#Max	16QAM	20.96	1	21.96	PASS
Band4	1.4	20393	3	#0	16QAM	21.22	1	22.22	PASS
Band4	1.4	20393	3	#Mid	16QAM	21.20	1	22.20	PASS
Band4	1.4	20393	3	#Max	16QAM	21.20	1	22.20	PASS
Band4	1.4	20393	6	#0	16QAM	20.38	1	21.38	PASS
Band4	3	19965	1	#0	QPSK	21.34	1	22.34	PASS
Band4	3	19965	1	#Mid	QPSK	21.16	1	22.16	PASS
Band4	3	19965	1	#Max	QPSK	20.87	1	21.87	PASS
Band4	3	19965	8	#0	QPSK	20.25	1	21.25	PASS
Band4	3	19965	8	#Mid	QPSK	20.21	1	21.21	PASS
Band4	3	19965	8	#Max	QPSK	20.08	1	21.08	PASS
Band4	3	19965	15	#0	QPSK	20.21	1	21.21	PASS
Band4	3	19965	1	#0	16QAM	20.75	1	21.75	PASS
Band4	3	19965	1	#Mid	16QAM	20.71	1	21.71	PASS
Band4	3	19965	1	#Max	16QAM	20.45	1	21.45	PASS
Band4	3	19965	8	#0	16QAM	19.45	1	20.45	PASS
Band4	3	19965	8	#Mid	16QAM	19.46	1	20.46	PASS

Band4	3	19965	8	#Max	16QAM	19.34	1	20.34	PASS
Band4	3	19965	15	#0	16QAM	19.46	1	20.46	PASS
Band4	3	20175	1	#0	QPSK	21.98	1	22.98	PASS
Band4	3	20175	1	#Mid	QPSK	22.13	1	23.13	PASS
Band4	3	20175	1	#Max	QPSK	22.17	1	23.17	PASS
Band4	3	20175	8	#0	QPSK	20.99	1	21.99	PASS
Band4	3	20175	8	#Mid	QPSK	21.07	1	22.07	PASS
Band4	3	20175	8	#Max	QPSK	21.16	1	22.16	PASS
Band4	3	20175	15	#0	QPSK	21.07	1	22.07	PASS
Band4	3	20175	1	#0	16QAM	21.24	1	22.24	PASS
Band4	3	20175	1	#Mid	16QAM	21.38	1	22.38	PASS
Band4	3	20175	1	#Max	16QAM	21.52	1	22.52	PASS
Band4	3	20175	8	#0	16QAM	20.17	1	21.17	PASS
Band4	3	20175	8	#Mid	16QAM	20.29	1	21.29	PASS
Band4	3	20175	8	#Max	16QAM	20.34	1	21.34	PASS
Band4	3	20175	15	#0	16QAM	20.25	1	21.25	PASS
Band4	3	20385	1	#0	QPSK	22.01	1	23.01	PASS
Band4	3	20385	1	#Mid	QPSK	21.94	1	22.94	PASS
Band4	3	20385	1	#Max	QPSK	21.78	1	22.78	PASS
Band4	3	20385	8	#0	QPSK	20.98	1	21.98	PASS
Band4	3	20385	8	#Mid	QPSK	21.06	1	22.06	PASS
Band4	3	20385	8	#Max	QPSK	20.99	1	21.99	PASS
Band4	3	20385	15	#0	QPSK	21.04	1	22.04	PASS
Band4	3	20385	1	#0	16QAM	20.98	1	21.98	PASS
Band4	3	20385	1	#Mid	16QAM	21.04	1	22.04	PASS
Band4	3	20385	1	#Max	16QAM	20.86	1	21.86	PASS
Band4	3	20385	8	#0	16QAM	20.20	1	21.20	PASS
Band4	3	20385	8	#Mid	16QAM	20.21	1	21.21	PASS
Band4	3	20385	8	#Max	16QAM	20.19	1	21.19	PASS
Band4	3	20385	15	#0	16QAM	20.26	1	21.26	PASS
Band4	5	19975	1	#0	QPSK	21.56	1	22.56	PASS
Band4	5	19975	1	#Mid	QPSK	21.07	1	22.07	PASS
Band4	5	19975	1	#Max	QPSK	20.86	1	21.86	PASS
Band4	5	19975	12	#0	QPSK	20.17	1	21.17	PASS
Band4	5	19975	12	#Mid	QPSK	20.06	1	21.06	PASS
Band4	5	19975	12	#Max	QPSK	19.92	1	20.92	PASS
Band4	5	19975	25	#0	QPSK	19.99	1	20.99	PASS
Band4	5	19975	1	#0	16QAM	21.00	1	22.00	PASS
Band4	5	19975	1	#Mid	16QAM	20.65	1	21.65	PASS
Band4	5	19975	1	#Max	16QAM	20.54	1	21.54	PASS
Band4	5	19975	12	#0	16QAM	19.34	1	20.34	PASS
Band4	5	19975	12	#Mid	16QAM	19.30	1	20.30	PASS
Band4	5	19975	12	#Max	16QAM	19.11	1	20.11	PASS
Band4	5	19975	25	#0	16QAM	19.19	1	20.19	PASS
Band4	5	20175	1	#0	QPSK	22.05	1	23.05	PASS
Band4	5	20175	1	#Mid	QPSK	22.09	1	23.09	PASS
Band4	5	20175	1	#Max	QPSK	22.33	1	23.33	PASS
Band4	5	20175	12	#0	QPSK	20.94	1	21.94	PASS
Band4	5	20175	12	#Mid	QPSK	21.14	1	22.14	PASS
Band4	5	20175	12	#Max	QPSK	21.22	1	22.22	PASS
Band4	5	20175	25	#0	QPSK	21.10	1	22.10	PASS
Band4	5	20175	1	#0	16QAM	21.30	1	22.30	PASS
Band4	5	20175	1	#Mid	16QAM	21.54	1	22.54	PASS
Band4	5	20175	1	#Max	16QAM	21.79	1	22.79	PASS
Band4	5	20175	12	#0	16QAM	20.04	1	21.04	PASS
Band4	5	20175	12	#Mid	16QAM	20.26	1	21.26	PASS
Band4	5	20175	12	#Max	16QAM	20.34	1	21.34	PASS

Band4	5	20175	25	#0	16QAM	20.27	1	21.27	PASS
Band4	5	20375	1	#0	QPSK	22.20	1	23.20	PASS
Band4	5	20375	1	#Mid	QPSK	21.94	1	22.94	PASS
Band4	5	20375	1	#Max	QPSK	21.86	1	22.86	PASS
Band4	5	20375	12	#0	QPSK	21.01	1	22.01	PASS
Band4	5	20375	12	#Mid	QPSK	21.09	1	22.09	PASS
Band4	5	20375	12	#Max	QPSK	20.95	1	21.95	PASS
Band4	5	20375	25	#0	QPSK	21.03	1	22.03	PASS
Band4	5	20375	1	#0	16QAM	21.63	1	22.63	PASS
Band4	5	20375	1	#Mid	16QAM	21.47	1	22.47	PASS
Band4	5	20375	1	#Max	16QAM	21.41	1	22.41	PASS
Band4	5	20375	12	#0	16QAM	20.27	1	21.27	PASS
Band4	5	20375	12	#Mid	16QAM	20.33	1	21.33	PASS
Band4	5	20375	12	#Max	16QAM	20.19	1	21.19	PASS
Band4	5	20375	25	#0	16QAM	20.21	1	21.21	PASS
Band4	10	20000	1	#0	QPSK	21.45	1	22.45	PASS
Band4	10	20000	1	#Mid	QPSK	20.70	1	21.70	PASS
Band4	10	20000	1	#Max	QPSK	20.17	1	21.17	PASS
Band4	10	20000	25	#0	QPSK	19.78	1	20.78	PASS
Band4	10	20000	25	#Mid	QPSK	19.65	1	20.65	PASS
Band4	10	20000	25	#Max	QPSK	19.35	1	20.35	PASS
Band4	10	20000	50	#0	QPSK	19.51	1	20.51	PASS
Band4	10	20175	1	#0	QPSK	21.47	1	22.47	PASS
Band4	10	20175	1	#Mid	QPSK	22.05	1	23.05	PASS
Band4	10	20175	1	#Max	QPSK	22.42	1	23.42	PASS
Band4	10	20175	25	#0	QPSK	20.61	1	21.61	PASS
Band4	10	20175	25	#Mid	QPSK	20.99	1	21.99	PASS
Band4	10	20175	25	#Max	QPSK	21.12	1	22.12	PASS
Band4	10	20175	50	#0	QPSK	20.86	1	21.86	PASS
Band4	10	20350	1	#0	QPSK	22.49	1	23.49	PASS
Band4	10	20350	1	#Mid	QPSK	22.05	1	23.05	PASS
Band4	10	20350	1	#Max	QPSK	21.86	1	22.86	PASS
Band4	10	20350	25	#0	QPSK	21.08	1	22.08	PASS
Band4	10	20350	25	#Mid	QPSK	21.01	1	22.01	PASS
Band4	10	20350	25	#Max	QPSK	20.84	1	21.84	PASS
Band4	10	20350	50	#0	QPSK	20.88	1	21.88	PASS
Band4	15	20025	1	#0	QPSK	21.73	1	22.73	PASS
Band4	15	20025	1	#Mid	QPSK	20.86	1	21.86	PASS
Band4	15	20025	1	#Max	QPSK	20.70	1	21.70	PASS
Band4	15	20025	36	#0	QPSK	20.21	1	21.21	PASS
Band4	15	20025	36	#Mid	QPSK	19.73	1	20.73	PASS
Band4	15	20025	36	#Max	QPSK	19.40	1	20.40	PASS
Band4	15	20025	75	#0	QPSK	21.23	1	22.23	PASS
Band4	15	20175	1	#0	QPSK	21.09	1	22.09	PASS
Band4	15	20175	1	#Mid	QPSK	21.89	1	22.89	PASS
Band4	15	20175	1	#Max	QPSK	22.41	1	23.41	PASS
Band4	15	20175	36	#0	QPSK	20.22	1	21.22	PASS
Band4	15	20175	36	#Mid	QPSK	20.72	1	21.72	PASS
Band4	15	20175	36	#Max	QPSK	21.01	1	22.01	PASS
Band4	15	20175	75	#0	QPSK	21.60	1	22.60	PASS
Band4	15	20325	1	#0	QPSK	22.62	1	23.62	PASS
Band4	15	20325	1	#Mid	QPSK	22.80	1	23.80	PASS
Band4	15	20325	1	#Max	QPSK	22.61	1	23.61	PASS
Band4	15	20325	36	#0	QPSK	21.51	1	22.51	PASS
Band4	15	20325	36	#Mid	QPSK	21.62	1	22.62	PASS
Band4	15	20325	36	#Max	QPSK	21.55	1	22.55	PASS
Band4	15	20325	75	#0	QPSK	22.30	1	23.30	PASS

Band4	20	20050	1	#0	QPSK	21.75	1	22.75	PASS
Band4	20	20050	1	#Mid	QPSK	20.42	1	21.42	PASS
Band4	20	20050	1	#Max	QPSK	21.20	1	22.20	PASS
Band4	20	20050	50	#0	QPSK	19.85	1	20.85	PASS
Band4	20	20050	50	#Mid	QPSK	19.39	1	20.39	PASS
Band4	20	20050	50	#Max	QPSK	19.51	1	20.51	PASS
Band4	20	20050	100	#0	QPSK	21.26	1	22.26	PASS
Band4	20	20175	1	#0	QPSK	21.02	1	22.02	PASS
Band4	20	20175	1	#Mid	QPSK	22.02	1	23.02	PASS
Band4	20	20175	1	#Max	QPSK	22.48	1	23.48	PASS
Band4	20	20175	50	#0	QPSK	19.97	1	20.97	PASS
Band4	20	20175	50	#Mid	QPSK	20.73	1	21.73	PASS
Band4	20	20175	50	#Max	QPSK	21.00	1	22.00	PASS
Band4	20	20175	100	#0	QPSK	-22.31	1	-21.31	PASS
Band4	20	20300	1	#0	QPSK	22.31	1	23.31	PASS
Band4	20	20300	1	#Mid	QPSK	22.77	1	23.77	PASS
Band4	20	20300	1	#Max	QPSK	22.67	1	23.67	PASS
Band4	20	20300	50	#0	QPSK	21.26	1	22.26	PASS
Band4	20	20300	50	#Mid	QPSK	21.55	1	22.55	PASS
Band4	20	20300	50	#Max	QPSK	21.42	1	22.42	PASS
Band4	20	20300	100	#0	QPSK	22.14	1	23.14	PASS

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	Gain (dBm)	ERP (dBm)	Verdict
Band5	1.4	20407	1	#0	QPSK	22.94	1	21.79	PASS
Band5	1.4	20407	1	#Mid	QPSK	23.01	1	21.86	PASS
Band5	1.4	20407	1	#Max	QPSK	23.06	1	21.91	PASS
Band5	1.4	20407	3	#0	QPSK	22.82	1	21.67	PASS
Band5	1.4	20407	3	#Mid	QPSK	22.84	1	21.69	PASS
Band5	1.4	20407	3	#Max	QPSK	22.95	1	21.80	PASS
Band5	1.4	20407	6	#0	QPSK	22.01	1	20.86	PASS
Band5	1.4	20407	1	#0	16QAM	22.11	1	20.96	PASS
Band5	1.4	20407	1	#Mid	16QAM	22.19	1	21.04	PASS
Band5	1.4	20407	1	#Max	16QAM	22.25	1	21.10	PASS
Band5	1.4	20407	3	#0	16QAM	22.14	1	20.99	PASS
Band5	1.4	20407	3	#Mid	16QAM	22.16	1	21.01	PASS
Band5	1.4	20407	3	#Max	16QAM	22.21	1	21.06	PASS
Band5	1.4	20407	6	#0	16QAM	21.17	1	20.02	PASS
Band5	1.4	20525	1	#0	QPSK	23.51	1	22.36	PASS
Band5	1.4	20525	1	#Mid	QPSK	23.57	1	22.42	PASS
Band5	1.4	20525	1	#Max	QPSK	23.49	1	22.34	PASS
Band5	1.4	20525	3	#0	QPSK	23.54	1	22.39	PASS
Band5	1.4	20525	3	#Mid	QPSK	23.52	1	22.37	PASS
Band5	1.4	20525	3	#Max	QPSK	23.54	1	22.39	PASS
Band5	1.4	20525	6	#0	QPSK	22.55	1	21.40	PASS
Band5	1.4	20525	1	#0	16QAM	22.68	1	21.53	PASS
Band5	1.4	20525	1	#Mid	16QAM	22.75	1	21.60	PASS
Band5	1.4	20525	1	#Max	16QAM	22.75	1	21.60	PASS
Band5	1.4	20525	3	#0	16QAM	22.81	1	21.66	PASS
Band5	1.4	20525	3	#Mid	16QAM	22.83	1	21.68	PASS
Band5	1.4	20525	3	#Max	16QAM	22.81	1	21.66	PASS
Band5	1.4	20525	6	#0	16QAM	21.80	1	20.65	PASS
Band5	1.4	20643	1	#0	QPSK	23.10	1	21.95	PASS
Band5	1.4	20643	1	#Mid	QPSK	23.05	1	21.90	PASS
Band5	1.4	20643	1	#Max	QPSK	22.87	1	21.72	PASS
Band5	1.4	20643	3	#0	QPSK	23.01	1	21.86	PASS
Band5	1.4	20643	3	#Mid	QPSK	22.96	1	21.81	PASS
Band5	1.4	20643	3	#Max	QPSK	22.90	1	21.75	PASS
Band5	1.4	20643	6	#0	QPSK	21.91	1	20.76	PASS
Band5	1.4	20643	1	#0	16QAM	21.87	1	20.72	PASS
Band5	1.4	20643	1	#Mid	16QAM	21.88	1	20.73	PASS
Band5	1.4	20643	1	#Max	16QAM	21.77	1	20.62	PASS
Band5	1.4	20643	3	#0	16QAM	22.11	1	20.96	PASS
Band5	1.4	20643	3	#Mid	16QAM	22.11	1	20.96	PASS
Band5	1.4	20643	3	#Max	16QAM	22.05	1	20.90	PASS
Band5	1.4	20643	6	#0	16QAM	21.19	1	20.04	PASS
Band5	3	20415	1	#0	QPSK	22.77	1	21.62	PASS
Band5	3	20415	1	#Mid	QPSK	22.97	1	21.82	PASS
Band5	3	20415	1	#Max	QPSK	23.06	1	21.91	PASS
Band5	3	20415	8	#0	QPSK	21.98	1	20.83	PASS
Band5	3	20415	8	#Mid	QPSK	22.04	1	20.89	PASS
Band5	3	20415	8	#Max	QPSK	22.19	1	21.04	PASS
Band5	3	20415	15	#0	QPSK	22.11	1	20.96	PASS
Band5	3	20415	1	#0	16QAM	22.29	1	21.14	PASS
Band5	3	20415	1	#Mid	16QAM	22.55	1	21.40	PASS
Band5	3	20415	1	#Max	16QAM	22.62	1	21.47	PASS
Band5	3	20415	8	#0	16QAM	21.03	1	19.88	PASS
Band5	3	20415	8	#Mid	16QAM	21.10	1	19.95	PASS

Band5	3	20415	8	#Max	16QAM	21.20	1	20.05	PASS
Band5	3	20415	15	#0	16QAM	21.12	1	19.97	PASS
Band5	3	20525	1	#0	QPSK	23.36	1	22.21	PASS
Band5	3	20525	1	#Mid	QPSK	23.53	1	22.38	PASS
Band5	3	20525	1	#Max	QPSK	23.38	1	22.23	PASS
Band5	3	20525	8	#0	QPSK	22.46	1	21.31	PASS
Band5	3	20525	8	#Mid	QPSK	22.47	1	21.32	PASS
Band5	3	20525	8	#Max	QPSK	22.44	1	21.29	PASS
Band5	3	20525	15	#0	QPSK	22.45	1	21.30	PASS
Band5	3	20525	1	#0	16QAM	22.60	1	21.45	PASS
Band5	3	20525	1	#Mid	16QAM	22.70	1	21.55	PASS
Band5	3	20525	1	#Max	16QAM	22.65	1	21.50	PASS
Band5	3	20525	8	#0	16QAM	21.60	1	20.45	PASS
Band5	3	20525	8	#Mid	16QAM	21.64	1	20.49	PASS
Band5	3	20525	8	#Max	16QAM	21.59	1	20.44	PASS
Band5	3	20525	15	#0	16QAM	21.58	1	20.43	PASS
Band5	3	20635	1	#0	QPSK	23.12	1	21.97	PASS
Band5	3	20635	1	#Mid	QPSK	23.06	1	21.91	PASS
Band5	3	20635	1	#Max	QPSK	22.85	1	21.70	PASS
Band5	3	20635	8	#0	QPSK	21.94	1	20.79	PASS
Band5	3	20635	8	#Mid	QPSK	21.95	1	20.80	PASS
Band5	3	20635	8	#Max	QPSK	21.86	1	20.71	PASS
Band5	3	20635	15	#0	QPSK	21.92	1	20.77	PASS
Band5	3	20635	1	#0	16QAM	21.92	1	20.77	PASS
Band5	3	20635	1	#Mid	16QAM	21.85	1	20.70	PASS
Band5	3	20635	1	#Max	16QAM	21.66	1	20.51	PASS
Band5	3	20635	8	#0	16QAM	21.15	1	20.00	PASS
Band5	3	20635	8	#Mid	16QAM	21.07	1	19.92	PASS
Band5	3	20635	8	#Max	16QAM	21.04	1	19.89	PASS
Band5	3	20635	15	#0	16QAM	21.11	1	19.96	PASS
Band5	5	20425	1	#0	QPSK	22.98	1	21.83	PASS
Band5	5	20425	1	#Mid	QPSK	23.19	1	22.04	PASS
Band5	5	20425	1	#Max	QPSK	23.39	1	22.24	PASS
Band5	5	20425	12	#0	QPSK	22.06	1	20.91	PASS
Band5	5	20425	12	#Mid	QPSK	22.30	1	21.15	PASS
Band5	5	20425	12	#Max	QPSK	22.35	1	21.20	PASS
Band5	5	20425	25	#0	QPSK	22.23	1	21.08	PASS
Band5	5	20425	1	#0	16QAM	22.57	1	21.42	PASS
Band5	5	20425	1	#Mid	16QAM	22.84	1	21.69	PASS
Band5	5	20425	1	#Max	16QAM	23.04	1	21.89	PASS
Band5	5	20425	12	#0	16QAM	21.04	1	19.89	PASS
Band5	5	20425	12	#Mid	16QAM	21.29	1	20.14	PASS
Band5	5	20425	12	#Max	16QAM	21.38	1	20.23	PASS
Band5	5	20425	25	#0	16QAM	21.19	1	20.04	PASS
Band5	5	20525	1	#0	QPSK	23.52	1	22.37	PASS
Band5	5	20525	1	#Mid	QPSK	23.57	1	22.42	PASS
Band5	5	20525	1	#Max	QPSK	23.62	1	22.47	PASS
Band5	5	20525	12	#0	QPSK	22.43	1	21.28	PASS
Band5	5	20525	12	#Mid	QPSK	22.54	1	21.39	PASS
Band5	5	20525	12	#Max	QPSK	22.44	1	21.29	PASS
Band5	5	20525	25	#0	QPSK	22.48	1	21.33	PASS
Band5	5	20525	1	#0	16QAM	22.82	1	21.67	PASS
Band5	5	20525	1	#Mid	16QAM	22.87	1	21.72	PASS
Band5	5	20525	1	#Max	16QAM	22.85	1	21.70	PASS
Band5	5	20525	12	#0	16QAM	21.48	1	20.33	PASS
Band5	5	20525	12	#Mid	16QAM	21.65	1	20.50	PASS
Band5	5	20525	12	#Max	16QAM	21.56	1	20.41	PASS

Band5	5	20525	25	#0	16QAM	21.65	1	20.50	PASS
Band5	5	20625	1	#0	QPSK	23.30	1	22.15	PASS
Band5	5	20625	1	#Mid	QPSK	23.13	1	21.98	PASS
Band5	5	20625	1	#Max	QPSK	22.98	1	21.83	PASS
Band5	5	20625	12	#0	QPSK	22.04	1	20.89	PASS
Band5	5	20625	12	#Mid	QPSK	22.07	1	20.92	PASS
Band5	5	20625	12	#Max	QPSK	21.94	1	20.79	PASS
Band5	5	20625	25	#0	QPSK	22.02	1	20.87	PASS
Band5	5	20625	1	#0	16QAM	22.52	1	21.37	PASS
Band5	5	20625	1	#Mid	16QAM	22.42	1	21.27	PASS
Band5	5	20625	1	#Max	16QAM	22.34	1	21.19	PASS
Band5	5	20625	12	#0	16QAM	21.23	1	20.08	PASS
Band5	5	20625	12	#Mid	16QAM	21.23	1	20.08	PASS
Band5	5	20625	12	#Max	16QAM	21.11	1	19.96	PASS
Band5	5	20625	25	#0	16QAM	21.18	1	20.03	PASS
Band5	10	20450	1	#0	QPSK	22.93	1	21.78	PASS
Band5	10	20450	1	#Mid	QPSK	23.26	1	22.11	PASS
Band5	10	20450	1	#Max	QPSK	23.30	1	22.15	PASS
Band5	10	20450	25	#0	QPSK	21.98	1	20.83	PASS
Band5	10	20450	25	#Mid	QPSK	22.30	1	21.15	PASS
Band5	10	20450	25	#Max	QPSK	22.18	1	21.03	PASS
Band5	10	20450	50	#0	QPSK	22.10	1	20.95	PASS
Band5	10	20525	1	#0	QPSK	23.42	1	22.27	PASS
Band5	10	20525	1	#Mid	QPSK	23.40	1	22.25	PASS
Band5	10	20525	1	#Max	QPSK	23.58	1	22.43	PASS
Band5	10	20525	25	#0	QPSK	22.15	1	21.00	PASS
Band5	10	20525	25	#Mid	QPSK	22.43	1	21.28	PASS
Band5	10	20525	25	#Max	QPSK	22.29	1	21.14	PASS
Band5	10	20525	50	#0	QPSK	22.29	1	21.14	PASS
Band5	10	20600	1	#0	QPSK	23.58	1	22.43	PASS
Band5	10	20600	1	#Mid	QPSK	23.14	1	21.99	PASS
Band5	10	20600	1	#Max	QPSK	23.10	1	21.95	PASS
Band5	10	20600	25	#0	QPSK	22.08	1	20.93	PASS
Band5	10	20600	25	#Mid	QPSK	22.06	1	20.91	PASS
Band5	10	20600	25	#Max	QPSK	21.86	1	20.71	PASS
Band5	10	20600	50	#0	QPSK	21.92	1	20.77	PASS

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	Gain (dBm)	EIRP (dBm)	Verdict
Band7	5	20775	1	#0	QPSK	23.94	1	24.94	PASS
Band7	5	20775	1	#Mid	QPSK	23.42	1	24.42	PASS
Band7	5	20775	1	#Max	QPSK	23.32	1	24.32	PASS
Band7	5	20775	12	#0	QPSK	22.11	1	23.11	PASS
Band7	5	20775	12	#Mid	QPSK	22.07	1	23.07	PASS
Band7	5	20775	12	#Max	QPSK	21.86	1	22.86	PASS
Band7	5	20775	25	#0	QPSK	22.00	1	23.00	PASS
Band7	5	20775	1	#0	16QAM	22.93	1	23.93	PASS
Band7	5	20775	1	#Mid	16QAM	22.51	1	23.51	PASS
Band7	5	20775	1	#Max	16QAM	22.47	1	23.47	PASS
Band7	5	20775	12	#0	16QAM	20.91	1	21.91	PASS
Band7	5	20775	12	#Mid	16QAM	20.87	1	21.87	PASS
Band7	5	20775	12	#Max	16QAM	20.62	1	21.62	PASS
Band7	5	20775	25	#0	16QAM	20.70	1	21.70	PASS
Band7	5	21100	1	#0	QPSK	22.42	1	23.42	PASS
Band7	5	21100	1	#Mid	QPSK	22.48	1	23.48	PASS
Band7	5	21100	1	#Max	QPSK	23.18	1	24.18	PASS
Band7	5	21100	12	#0	QPSK	21.07	1	22.07	PASS
Band7	5	21100	12	#Mid	QPSK	21.24	1	22.24	PASS
Band7	5	21100	12	#Max	QPSK	21.51	1	22.51	PASS
Band7	5	21100	25	#0	QPSK	21.20	1	22.20	PASS
Band7	5	21100	1	#0	16QAM	21.46	1	22.46	PASS
Band7	5	21100	1	#Mid	16QAM	21.53	1	22.53	PASS
Band7	5	21100	1	#Max	16QAM	22.20	1	23.20	PASS
Band7	5	21100	12	#0	16QAM	20.08	1	21.08	PASS
Band7	5	21100	12	#Mid	16QAM	20.26	1	21.26	PASS
Band7	5	21100	12	#Max	16QAM	20.45	1	21.45	PASS
Band7	5	21100	25	#0	16QAM	20.27	1	21.27	PASS
Band7	5	21425	1	#0	QPSK	23.13	1	24.13	PASS
Band7	5	21425	1	#Mid	QPSK	23.06	1	24.06	PASS
Band7	5	21425	1	#Max	QPSK	23.09	1	24.09	PASS
Band7	5	21425	12	#0	QPSK	21.65	1	22.65	PASS
Band7	5	21425	12	#Mid	QPSK	21.83	1	22.83	PASS
Band7	5	21425	12	#Max	QPSK	21.79	1	22.79	PASS
Band7	5	21425	25	#0	QPSK	21.75	1	22.75	PASS
Band7	5	21425	1	#0	16QAM	22.10	1	23.10	PASS
Band7	5	21425	1	#Mid	16QAM	22.06	1	23.06	PASS
Band7	5	21425	1	#Max	16QAM	22.13	1	23.13	PASS
Band7	5	21425	12	#0	16QAM	20.49	1	21.49	PASS
Band7	5	21425	12	#Mid	16QAM	20.64	1	21.64	PASS
Band7	5	21425	12	#Max	16QAM	20.62	1	21.62	PASS
Band7	5	21425	25	#0	16QAM	20.52	1	21.52	PASS
Band7	10	20800	1	#0	QPSK	24.12	1	25.12	PASS
Band7	10	20800	1	#Mid	QPSK	22.99	1	23.99	PASS
Band7	10	20800	1	#Max	QPSK	22.78	1	23.78	PASS
Band7	10	20800	25	#0	QPSK	21.82	1	22.82	PASS
Band7	10	20800	25	#Mid	QPSK	21.62	1	22.62	PASS
Band7	10	20800	25	#Max	QPSK	21.23	1	22.23	PASS
Band7	10	20800	50	#0	QPSK	21.51	1	22.51	PASS
Band7	10	21100	1	#0	QPSK	22.28	1	23.28	PASS
Band7	10	21100	1	#Mid	QPSK	22.44	1	23.44	PASS
Band7	10	21100	1	#Max	QPSK	23.85	1	24.85	PASS
Band7	10	21100	25	#0	QPSK	20.84	1	21.84	PASS
Band7	10	21100	25	#Mid	QPSK	21.13	1	22.13	PASS

Band7	10	21100	25	#Max	QPSK	21.59	1	22.59	PASS
Band7	10	21100	50	#0	QPSK	21.03	1	22.03	PASS
Band7	10	21400	1	#0	QPSK	22.88	1	23.88	PASS
Band7	10	21400	1	#Mid	QPSK	22.88	1	23.88	PASS
Band7	10	21400	1	#Max	QPSK	23.44	1	24.44	PASS
Band7	10	21400	25	#0	QPSK	21.16	1	22.16	PASS
Band7	10	21400	25	#Mid	QPSK	21.46	1	22.46	PASS
Band7	10	21400	25	#Max	QPSK	21.58	1	22.58	PASS
Band7	10	21400	50	#0	QPSK	21.35	1	22.35	PASS
Band7	15	20825	1	#0	QPSK	23.09	1	24.09	PASS
Band7	15	20825	1	#Mid	QPSK	22.29	1	23.29	PASS
Band7	15	20825	1	#Max	QPSK	21.93	1	22.93	PASS
Band7	15	20825	36	#0	QPSK	21.51	1	22.51	PASS
Band7	15	20825	36	#Mid	QPSK	21.23	1	22.23	PASS
Band7	15	20825	36	#Max	QPSK	20.88	1	21.88	PASS
Band7	15	20825	75	#0	QPSK	22.63	1	23.63	PASS
Band7	15	21100	1	#0	QPSK	21.96	1	22.96	PASS
Band7	15	21100	1	#Mid	QPSK	22.32	1	23.32	PASS
Band7	15	21100	1	#Max	QPSK	23.47	1	24.47	PASS
Band7	15	21100	36	#0	QPSK	20.88	1	21.88	PASS
Band7	15	21100	36	#Mid	QPSK	21.29	1	22.29	PASS
Band7	15	21100	36	#Max	QPSK	21.94	1	22.94	PASS
Band7	15	21100	75	#0	QPSK	22.90	1	23.90	PASS
Band7	15	21375	1	#0	QPSK	22.95	1	23.95	PASS
Band7	15	21375	1	#Mid	QPSK	22.20	1	23.20	PASS
Band7	15	21375	1	#Max	QPSK	22.79	1	23.79	PASS
Band7	15	21375	36	#0	QPSK	21.14	1	22.14	PASS
Band7	15	21375	36	#Mid	QPSK	21.28	1	22.28	PASS
Band7	15	21375	36	#Max	QPSK	21.48	1	22.48	PASS
Band7	15	21375	75	#0	QPSK	22.39	1	23.39	PASS
Band7	20	20850	1	#0	QPSK	23.13	1	24.13	PASS
Band7	20	20850	1	#Mid	QPSK	22.14	1	23.14	PASS
Band7	20	20850	1	#Max	QPSK	21.85	1	22.85	PASS
Band7	20	20850	50	#0	QPSK	21.41	1	22.41	PASS
Band7	20	20850	50	#Mid	QPSK	21.14	1	22.14	PASS
Band7	20	20850	50	#Max	QPSK	20.89	1	21.89	PASS
Band7	20	20850	100	#0	QPSK	21.60	1	22.60	PASS
Band7	20	21100	1	#0	QPSK	21.87	1	22.87	PASS
Band7	20	21100	1	#Mid	QPSK	22.38	1	23.38	PASS
Band7	20	21100	1	#Max	QPSK	23.71	1	24.71	PASS
Band7	20	21100	50	#0	QPSK	20.77	1	21.77	PASS
Band7	20	21100	50	#Mid	QPSK	21.28	1	22.28	PASS
Band7	20	21100	50	#Max	QPSK	22.06	1	23.06	PASS
Band7	20	21100	100	#0	QPSK	22.98	1	23.98	PASS
Band7	20	21350	1	#0	QPSK	23.86	1	24.86	PASS
Band7	20	21350	1	#Mid	QPSK	22.15	1	23.15	PASS
Band7	20	21350	1	#Max	QPSK	22.80	1	23.80	PASS
Band7	20	21350	50	#0	QPSK	21.67	1	22.67	PASS
Band7	20	21350	50	#Mid	QPSK	21.13	1	22.13	PASS
Band7	20	21350	50	#Max	QPSK	21.24	1	22.24	PASS
Band7	20	21350	100	#0	QPSK	22.40	1	23.40	PASS

Band	Bandwidth (MHz)	UL Channel	RB Size	RB Position	Modulation	Power (dBm)	Gain (dBm)	EIRP (dBm)	Verdict
Band66	1.4	131979	1	#0	QPSK	22.18	1	23.18	PASS
Band66	1.4	131979	1	#Mid	QPSK	22.08	1	23.08	PASS
Band66	1.4	131979	1	#Max	QPSK	21.97	1	22.97	PASS
Band66	1.4	131979	3	#0	QPSK	21.97	1	22.97	PASS
Band66	1.4	131979	3	#Mid	QPSK	21.90	1	22.90	PASS
Band66	1.4	131979	3	#Max	QPSK	21.87	1	22.87	PASS
Band66	1.4	131979	6	#0	QPSK	20.97	1	21.97	PASS
Band66	1.4	131979	1	#0	16QAM	21.32	1	22.32	PASS
Band66	1.4	131979	1	#Mid	16QAM	21.21	1	22.21	PASS
Band66	1.4	131979	1	#Max	16QAM	21.20	1	22.20	PASS
Band66	1.4	131979	3	#0	16QAM	21.28	1	22.28	PASS
Band66	1.4	131979	3	#Mid	16QAM	21.27	1	22.27	PASS
Band66	1.4	131979	3	#Max	16QAM	21.23	1	22.23	PASS
Band66	1.4	131979	6	#0	16QAM	20.32	1	21.32	PASS
Band66	1.4	132322	1	#0	QPSK	23.21	1	24.21	PASS
Band66	1.4	132322	1	#Mid	QPSK	23.19	1	24.19	PASS
Band66	1.4	132322	1	#Max	QPSK	23.12	1	24.12	PASS
Band66	1.4	132322	3	#0	QPSK	23.13	1	24.13	PASS
Band66	1.4	132322	3	#Mid	QPSK	23.06	1	24.06	PASS
Band66	1.4	132322	3	#Max	QPSK	23.05	1	24.05	PASS
Band66	1.4	132322	6	#0	QPSK	22.16	1	23.16	PASS
Band66	1.4	132322	1	#0	16QAM	22.41	1	23.41	PASS
Band66	1.4	132322	1	#Mid	16QAM	22.39	1	23.39	PASS
Band66	1.4	132322	1	#Max	16QAM	22.43	1	23.43	PASS
Band66	1.4	132322	3	#0	16QAM	22.42	1	23.42	PASS
Band66	1.4	132322	3	#Mid	16QAM	22.44	1	23.44	PASS
Band66	1.4	132322	3	#Max	16QAM	22.43	1	23.43	PASS
Band66	1.4	132322	6	#0	16QAM	21.50	1	22.50	PASS
Band66	1.4	132665	1	#0	QPSK	20.16	1	21.16	PASS
Band66	1.4	132665	1	#Mid	QPSK	20.11	1	21.11	PASS
Band66	1.4	132665	1	#Max	QPSK	20.10	1	21.10	PASS
Band66	1.4	132665	3	#0	QPSK	20.03	1	21.03	PASS
Band66	1.4	132665	3	#Mid	QPSK	20.01	1	21.01	PASS
Band66	1.4	132665	3	#Max	QPSK	20.12	1	21.12	PASS
Band66	1.4	132665	6	#0	QPSK	19.23	1	20.23	PASS
Band66	1.4	132665	1	#0	16QAM	19.17	1	20.17	PASS
Band66	1.4	132665	1	#Mid	16QAM	19.22	1	20.22	PASS
Band66	1.4	132665	1	#Max	16QAM	19.24	1	20.24	PASS
Band66	1.4	132665	3	#0	16QAM	19.46	1	20.46	PASS
Band66	1.4	132665	3	#Mid	16QAM	19.46	1	20.46	PASS
Band66	1.4	132665	3	#Max	16QAM	19.48	1	20.48	PASS
Band66	1.4	132665	6	#0	16QAM	18.57	1	19.57	PASS
Band66	3	131987	1	#0	QPSK	22.04	1	23.04	PASS
Band66	3	131987	1	#Mid	QPSK	21.87	1	22.87	PASS
Band66	3	131987	1	#Max	QPSK	21.56	1	22.56	PASS
Band66	3	131987	8	#0	QPSK	20.98	1	21.98	PASS
Band66	3	131987	8	#Mid	QPSK	20.87	1	21.87	PASS
Band66	3	131987	8	#Max	QPSK	20.83	1	21.83	PASS
Band66	3	131987	15	#0	QPSK	20.82	1	21.82	PASS
Band66	3	131987	1	#0	16QAM	21.41	1	22.41	PASS
Band66	3	131987	1	#Mid	16QAM	21.38	1	22.38	PASS
Band66	3	131987	1	#Max	16QAM	21.10	1	22.10	PASS
Band66	3	131987	8	#0	16QAM	20.04	1	21.04	PASS
Band66	3	131987	8	#Mid	16QAM	20.04	1	21.04	PASS